KHAPRA BEETLE

threatens Nation's stored grain and seed

World's worst stored grain pest

The khapra beetle--one of the most damaging stored product pests--is a continuing threat to the billions of bushels of grain, seed, and feed stored annually in this country. The beetle also attacks many other stored vegetable and animal products.

The difficulty of detecting the tiny khapra beetle--it is only about one-eighth of an inch long--heightens the danger of spread of the pest. The insect resembles the carpet beetle and works its way into small cracks in cartons, masonry, sacks, and woodwork, and in debris. It can easily be carried from place to place unnoticed. Meticulous and repeated inspection is often necessary to locate it.

So far, intensive U. S. Department of Agriculture and State inspection and eradication efforts have confined the pest to isolated infestations in California--where it was first found in this country in 1953--and in Texas, New Mexico, and Arizona. The cooperative program with the Republic of Mexico also has made substantial progress in treating infested sites and in surveying for the pest in that country.

In spite of these efforts, there is cause for concern. The beetle has been appearing in shipments of grain and grain products at Atlantic, Pacific, Gulf, and Great Lakes ports.

In a single year, Federal quarantine inspectors have intercepted the pest 43 times at 16 different ports of entry, including the important grain port of Cleveland, Ohio.

With internal freight traffic growing and with ocean-going cargo ships plying the St. Lawrence Seaway, the danger of the khapra beetle reaching our vital Midwest grain stores has increased. Should the pest gain a foothold in that area it could do incalculable damage.

Conventional application of insecticides cannot reach the beetle or its larvae, which may penetrate deep into grain or into inaccessible places. Fumigation with methyl bromide gas is the method used to eradicate the pest. Elevators and other stored-product warehouses must be wrapped in gastight tarpaulins before the gas is released. A single large structure in California, for example, required 9½ acres of tarpaulins and 12 tons of gas.

Whenever an infestation is located, the site is placed under quarantine and eradication measures are begun under the cooperative program. Of 715 sites found infested so far in the four States and Mexico, 695 representing over 168 million cubic feet of storage have been treated.

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Under the leadership of Agricultural Research Service's Plant Pest Control Division, repeated surveys are made in the infested States. Periodic checks are also made in principal storage areas throughout the country.

To ward off the threat of further spread of this serious pest the help of all handlers of stored grain and feed products is needed. Farmers, operators of grain and feed houses, and trucking and railway companies are urged to be on the alert for the khapra beetle. Report suspected infestations to State or Federal plant pest control inspectors or to your County Agent.

Khapra beetle adult and larvae. The beetle is brownish-black, about 1/8 inch in length. The female may lay over 100 eggs which hatch in 5 to 16 days. The larvae--about ¼ inch long when full grown--have alternate patches of yellow and yellowish-brown skin covered by brown hair. BN-9590X

Freighters from countries infested by the khapra beetle come up the St. Lawrence seaway and other ports of entry and dock alongside grain elevators. Undetected khapra beetles and larvae in cargoes could invade our midwestern grain storage area and cause incalculable losses. N-25677

The khapra beetle is spread through movement of grain or grain products, but it can travel in or on a wide variety of media. Bags and bagging and other material reused for grain distribution are a frequent source of new infestations. FCI-106

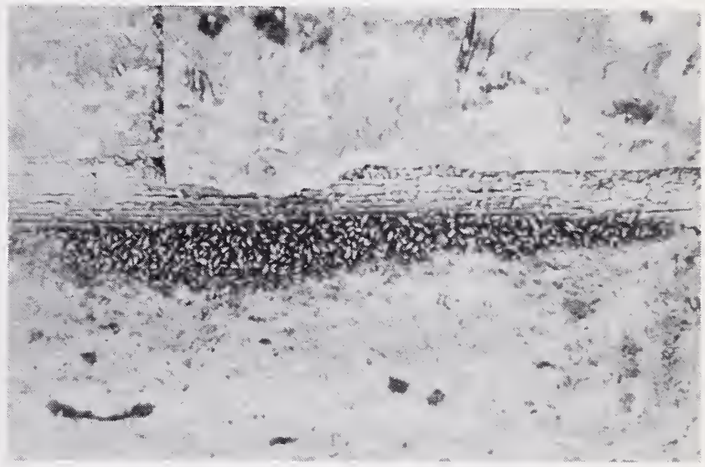
Khapra-beetle larvae feed on a wide variety of stored products but prefer cereal grains. Here they feed on corn. An infested lot of grain if left undisturbed over a long period would eventually become a total loss. BN-2084

Barley infested by khapra-beetle larvae. Although the pest prefers to live on the surface of bulk-stored grain, it has been found as deep as 12 feet beneath the surface. Heavy infestations heat the grain and create favorable conditions for rapid increase of the insects. BN-1241

Khapra beetle in lima beans. The pest also likes navy beans and black-eyed peas and will attack flaxseed, alfalfa seed, various nut meats, dried milk, and dried fruits. BN-9573X

Quite heavy infestations of khapra beetles have been found in noodles, spaghetti, several types of breakfast foods, crackers, and other processed grain materials. The entire mass may be reduced to powder. BN-9599X

When ready to pupate the khapra-beetle larvae leave the grain and congregate in large numbers in corners of grain bins, next to wall studs or footings, and in similar places. The larvae shed their skins several times during the life cycle. N-14428



USDA plant pest control inspector examines ears and seams of grain bags--a favorite hiding place of khapra beetles. Detection of this pest is an arduous and meticulous job. Light infestations are especially difficult to find. BN-10404X

Searching for khapra beetles in grain scattered on railroad siding outside storage building. The pest prefers cover to open locations, but inspection of grain debris often provides information as to the extent of infestation. BN-9434X

Areas surrounding structures to be fumigated for khapra beetle are thoroughly sprayed with insecticide in oil. The ground and fencing and other structures are sprayed at least three times -- prior to, during, and after the fumigation. BN-10405X

Grain storage site is readied here for fumigation with methyl bromide gas. Giant tarpaulins are formed by rolling edges of smaller ones and fastening with clamps. The operation must be done when there is little wind to tear the covering or pull it loose. BN-2083

To secure adequate concentration of gas in bulk grain, perforated probes at the ends of 1¼-inch iron pipes are forced to the bottom of the grain pile. The pipes are attached by means of flexible tubing to vacuum-cleaner motors. The gas in the space over the grain is drawn down through the grain mass by the suction of the motors. BN-9430X

The khapra beetle is difficult to eradicate from cattle-feeding establishments such as this one. Movable feeding troughs and other equipment may be stacked, covered tight, and fumigated. Fences and other parts must be thoroughly sprayed with approved insecticide. BN-9436X

Here tanks of methyl bromide gas are being arranged for discharge into the tarpaulin-covered storage building. One large warehouse required 9½ acres of tarpaulin and 12 tons of fumigant. BN-9559X

The wrapping and treatment of each storage facility requires individual study. The gas is introduced at 5 pounds per 1,000 cu. ft., and concentrations are maintained at 32 ounces or above for not less than an aggregate of 24 hours of the 48-hour treatment period. BN-2245